WHAT IS CLAIMED IS:

1. A composite comprising at least one exfoliated clay pillared in a carbonized matrix, wherein the exfoliated clay exhibits a number average platelet stacking of not greater than 100 platelets by X-ray diffraction.

2. The composite of Claim 1 the number average platelet stacking is not greater than 10.

3. The composite of Claim 1 wherein the clay includes at least one low aspect ratio clay having an aspect ratio in the range of from about 10:1 to about 50:1 and at least one high aspect ratio multilamellar clay having an aspect ratio in the range of from about 100:1 to about 1000:1.

4. The composite of Claim 3 wherein the low aspect ratio clay is selected from the group consisting of exfoliated saponites and hectorites; and the high aspect ratio clay is selected from the group consisting of exfoliated montmorillonites, fluoromicas, fluorohectorites, and magadiites.

5. The composite of Claim 1 which is dispersed in a polymer.

6. A method of forming a composite comprising the steps of a) dispersing and exfoliating a multilamellar clay in a matrix containing a carbonizable organic material to form a precursor composite, wherein the matrix has a viscosity sufficient to inhibit collapse of the dispersed and exfoliated clay; and b) heating the precursor composite under such conditions to form a pillared dispersion of the exfoliated clay in a carbonized matrix.

7. The method of Claim 6 wherein the matrix is a gelling agent having a dielectric constant of at least 5.

8. The method of Claim 7 wherein the gelling agent is an aqueous solution of one or more solids selected from the group consisting of starches, cyclodextrins, gelatins, sugars, and cellulose ethers.

9. The method of Claim 8 wherein the gelling agent is an aqueous solution of a starch.

10. The method of Claim 6 wherein the matrix is a polymer selected from the group consisting of polyether polyols and polyalkylene oxides.

11. The method of Claim 6 which further includes after step (b) the step (c) grinding the composite to form a micron- or submicron-sized pillared dispersion of the exfoliated clay in the carbonized matrix.

12. The method of Claim 11 which further includes after step (c) the step of heating the pillared dispersion to sufficient temperature to burn off the carbonized matrix and to form a porous ceramic foam.

13. The method of Claim 6 wherein in step (b) the precursor composite is heated to a temperature of at least 300° C, and not greater than 600° C.

14. The composite of Claim 6 wherein the precursor composite is heated under such conditions to achieve a weight loss of at least about 50 and not more than about 90 weight percent of the carbonizable organic material of the gelling agent.

15. The method of Claim 6 which further includes after step (c) the step of dissolving the clay in a solvent for the clay and extracting at least some of the clay from the composite to form a porous carbonized composite matrix.

16. The method of Claim 15 wherein the solvent is acidic and wherein the clay includes at least one acid etchable clay and at least one clay that is resistant to acid etching.

17. The method of Claim 16 wherein the at least one acid etchable clay is selected from the group consisting of saponites, hectorites, fluoromicas, and fluorohectorites; and the at least one clay that is resistant to acid etching is selected from the group consisting of montmorillonites and magadiites.

18. The method of Claim 17 which includes the step of dispersing the porous carbonized matrix in a polymer.

19. The method of Claim 6 wherein the clay includes at least one low aspect ratio clay having an aspect ratio in the range of from about 10:1 to about 50:1 and at least one high aspect ratio multilamellar clay having an aspect ratio in the range of from about 100:1 to about 1000:1.

20. The method of Claim 19 wherein the low aspect ratio multilamellar clay is selected from the group consisting of saponites and hectorites; and the high aspect ratio multilamellar clay is selected from the group consisting of montmorillonites, fluoromicas, fluorohectorites, and magadiites.